

A NEW SUBSPECIES OF *GLAUCOPSYCHE LYGDAMUS*
FROM CALIFORNIA (LEPIDOPTERA: LYCAENIDAE)

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Abstract.—*Glaucopsyche lygdamus palosverdesensis*, new subspecies, is described.

While residing in the Palos Verdes Peninsula of southern California, the senior author had the opportunity to explore the few remaining, undisturbed seaward canyons and marine terraces that once typified this unique area. Consequently, a series of *Glaucopsyche lygdamus* (Doubleday) was collected during the months of February and March, between the years 1973 and 1976.

In the coastal sage scrub plant community that characterizes this region, the butterflies were never observed to be far from the flowers of a rattleweed or locoweed plant, *Astragalus* L. Given that the northern California Coast Range subspecies, *Glaucopsyche lygdamus incognitus* Tilden, uses several species of *Lupinus* L., whereas *Lotus scoparius* (Nutt.) Otlely is known to be the only host of the cismontane southern California subspecies, *Glaucopsyche lygdamus australis* Grinnell, the authors conducted a search to determine what particular foodplant was being utilized. Although we failed to discover either of these plants where adults flew, subsequent observations confirmed that *in copula* pairs and ovipositing females were always to be found in association with the legume employed as their sole foodplant: *Astragalus trichopodus* (Nutt.) Gray ssp. *leucopsis* (Torr.) T. & G.

Comparison of the Series.—Comprised of adults taken on the wing, as well as individuals reared *ex ova* and *ex larva*. Additional materials borrowed from the Allan Hancock Foundation (University of Southern California, Los Angeles), Allyn Museum of Entomology (Sarasota, Florida), California Academy of Sciences (Golden Gate Park, San Francisco), California Insect Survey (University of California, Berkeley), Los Angeles County Museum of Natural History, and National Museum of Natural History (Smithsonian Institution) confirmed our premise that an unnamed subspecies existed.

Its unique phenotype, habitat, foodplant and flight period attest to wisdom inherent in the old adage: "There is much to be discovered in one's own back yard!"

Glaucopsyche lygdamus palosverdesensis Perkins & Emmel, new subspecies
(Fig. 1)

Male.—Maximum radius of left forewing of the holotype, 15.7 mm.
Upperside: Iridescent blue, with faint greenish-violet hues. Black,

prominent outer margin of forewing continuous from apical area of costal margin to tornus of outer angle; inwardly, outer margin blends imperceptibly with black scaling on M_1 - Cu_2 vein-ends.

Underside: Ground color grayish white. Basal area of hind wing moderately suffused with pale bluish pubescence. Marginal fringe of forewing and hind wing white, interrupted at intervals corresponding to wing veins by black scales, producing checkered effect. Marginal fringe of both wings set off by complete terminal lines that are sharply demarcated. Postmedian row of forewing spots white, accentuated by large, distinct black pupils; postmedian row of hind wing spots proportionally smaller but otherwise similar to those of forewing. Usually 1, well-developed postbasal spot on hind wing. Forewing cell-end bar black, surrounded by white; hind wing cell-end bar faintly black, outlined by white.

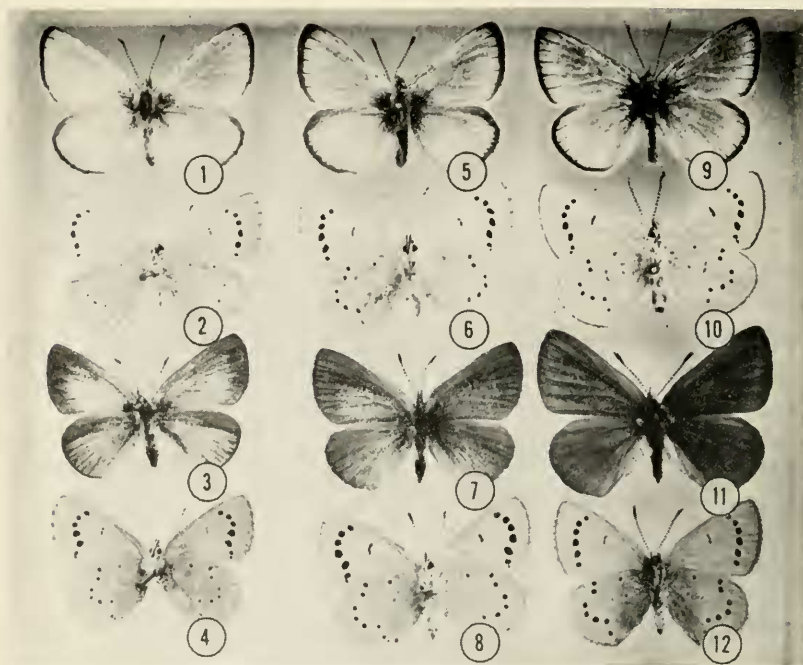
Female.—Maximum radius of left forewing of the allotype, 15.9 mm.

Upperside: Dark gray, with blue iridescent scaling usually confined to discal areas of forewing and hind wing.

Underside: Ground color light grayish tan. Postmedian row of hind wing spots proportionally smaller than those of forewing, but widely ringed with white. Otherwise, similar to male.

Distinguishing Features.—The subspecies *palosverdesensis* is larger than *australis* but smaller than *incognitus* (refer to Fig. 1). The mean left forewing radius of males in each subspecies is 15.75 mm, 15.32 mm and 16.19 mm, respectively, whereas females measure 15.93 mm, 14.98 mm and 16.43 mm, respectively. The darker, richer blue color on the upper surfaces of *palosverdesensis* males resembles that exhibited by *incognitus* males but is unlike the pale bluish luster that characterizes *australis* males. When compared to those of *australis* males, the black outer margins of *palosverdesensis* and *incognitus* males are distinctly darker and more prominent. The dark gray color of *palosverdesensis* females, which is highlighted by blue iridescence that is restricted to the discal areas of the wings above, is also distinctive. In *australis* females, the color is predominantly iridescent blue and is set off by grayish-black scaling along the costal margin, apical and limbal areas of the forewing and costal margin and anal angle of the hind wing. By contrast, *incognitus* females are brown above, with occasional blue scaling confined to the basal areas of the wings only. In both sexes of *palosverdesensis*, the suffusion of white and black scales (in the relative absence of brown scales) produces a chalky gray ground color that is unique. Unlike *australis*, postmedian black spots on the hind wings are larger and better developed in both sexes of *palosverdesensis*; unlike *incognitus*, whose postmedian black spots are also comparably large on both wings, those of *palosverdesensis* are prominently haloed by rings of white.

A detailed study of the entire *Glaucopsyche lygdamus* species-complex, which is to be published by the authors in the near future, precludes the



Figs. 1-4. *Glaucopsyche lygdamus australis*. 1, ♂ above, Baldwin Hills, Los Angeles Co., Calif., 19-II-61, leg. J. F. Emmel. 2, ♂ below, Upland, San Bernardino Co., Calif., 8-IV-57, leg. T. M. Blackman. 3, ♀ above, El Cajon, San Diego Co., Calif., 14-III-59, leg. A. O. Shields. 4, ♀ below, 15-III-59, otherwise, same data as 3. Figs. 5-8. *Glaucopsyche lygdamus palosverdesensis*. 5, ♂ holotype above, Rancho Palos Verdes, Palos Verdes Peninsula, Los Angeles Co., Calif., 24-II-74, leg. E. M. Perkins. 6, ♂ paratype below, 21-II-74, otherwise, same data as holotype. 7, ♀ allotype above, same data as holotype. 8, ♀ paratype below, 23-II-74, otherwise, same data as holotype. Figs. 9-12. *Glaucopsyche lygdamus incognitus*. 9, ♂ topotype above, Alum Rock Park, 6 mi NE San Jose, Santa Clara Co., Calif., 2-IV-60, leg. O. E. Sette. 10, ♂ topotype below, same data as 9. 11, ♀ above, 1 mi W Angwin, Napa Co., Calif., 7-IV-68, leg. R. L. Langston. 12, ♀ below, Twin Peaks, San Francisco, San Francisco Co., Calif., 4-IV-66, leg. N. La Due. All specimens are photographed to scale.

necessity of comparing *palosverdesensis* with other *lygdamus* subspecies at this time.

Holotype.—Male, to be deposited in the Collection of the United States National Museum of Natural History, Washington, D.C. Data accompanying specimen is as follows: Rancho Palos Verdes, Palos Verdes Peninsula, Los Angeles County, California, 800 feet above sea level, 24 February 1974, leg. E. M. Perkins.

Allotype.—Female, to be deposited in the Collection of the United States National Museum of Natural History; bears the same data as the holotype.

Paratypes.—Sixty-seven ♂♂, 34♀♀, collected by E. M. Perkins and J. F. Emmel at the same place as the holotype on dates ranging from 1 February 1973 through 28 March 1976. Thirteen ♂♂, 6♀♀ to be deposited with the holotype and allotype; the remaining paratypes to be distributed as follows: 12♂♂, 5♀♀ (Allyn Museum of Entomology), 12♂♂, 5♀♀ (American Museum of Natural History), 12♂♂, 5♀♀ (California Academy of Sciences), 12♂♂, 7♀♀ (Los Angeles County Museum of Natural History), and 6♂♂, 6♀♀ (to be retained by the authors).

Four additional males (bearing the data: "Collection of John S. Garth, Palos Verdes Hills, Cal., 3-6-28") are also designated paratypes and will be retained in the USC, Allan Hancock Foundation collection, where they were originally brought to our attention by its curator.

Remarks.—The distribution of *palosverdesensis* is exclusively peninsular, being restricted to the cool, fog-shrouded seaward side of the Palos Verdes Hills. This area includes the communities of Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Rolling Hills and Portugese Bend. Specimens examined from within an eight-mile radius to the north and east agree favorably in phenotype with other populations of *australis*, which inhabit the Los Angeles Basin.

At present, the well-being of *palosverdesensis* is uncertain. The threat of accelerated residential and commercial development points uneasily to the fate of *Glaucoopsyche xerces* (Boisduval), another California peninsular endemic—now extinct some thirty-five years!

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